17 November 1967

STATINTL

MEMORANDUM FOR: [redacted]

SUBJECT : Analysis of Proposed Tape to Film Converter

1. We find the proposal for a Magnetic Tape to Microfilm Converter, STATINTL as detailed by [redacted] and advocated by [redacted], to be accurately STATINTL and persuasively stated. Further we find several large files in the Vital Records Storage for DDS Offices which seem to be well suited to this type operation.

2. We also find every professional microfilm expert quick to caution the expectant microfilm user with the statement: "Sometimes potential applications simply will not provide an adequate return on the investment." The experience of this office maintains that a "microfilm application predicated solely upon the expectation of savings in file space for completed or retired records can be a serious mistake." A recent Navy Management article makes the same point and cites several microfilming criterias worth attention here, such as:

> "The savings in space will compensate for the cost of the microfilm system only if the space cost is very high (is highly desirable and competed for) or the file size is truly massive."

3. The Aviation Supply Office in Philadelphia specifies that a microfilm application should have one or a combination of the following characteristics to a significant degree:

"The records must be of a relatively permanent and stable nature. A frequent and high rate of change may result in an unacceptable cost because updating the microfilm file is an expensive process.

"The number of records in the file must be large--on the order of tens of thousands.

"There must be frequent reference to the file by many users--on the order of 3,000 to 4,000 a month. This criteria becomes more important if an 'out of file' situation hampers the operations of the users."

"There should be a frequent need for speed in providing copies of records in the file--on the order of at least 300 reproduced per month."

"The physical size of the file should be large and the space available limited and/or the space is needed for an office rather than for file operations."

"The nature of the file should be such that it would not acquire an elaborate and expensive locator system if the file is converted to microfilm."

"The data in the file is not at present readily accessible from some form of mechanized data retrieval system."

Although the foregoing criteria are used to govern the feasibility of converting hard-copy records to microfilm most of the basic principles are also applicable for microfilming mechanized file and are doubly applicable for files not yet in machine language and requiring expensive input operations to get them on magnetic tape in the first place.

4. The cost estimates of the subject microfilming proposal should include:

a. Computer time--about $15,000 to $25,000 per month

b. Tape converter; character or line plotter type--about $2,000 to $9,000 per month

c. Microfilm supplies ($2.68 per reel) and processing ($1.95)--about $1,000 to $2,000 per month
(4,000 to 6,000 pages per hour)
(2,000 pages per reel or 2 to 3 reels per hour)
(16 to 24 reels per day is equal to that many boxes of hard copy)
(The $4.63 each is $74 to $111 per day for about 20 days per month)

d. Every application will require a $2,100 film reader printer.

5. Without considering computer costs, personnel requirements, new positions, or machine floor space the proposed operation budget will cost an additional $36,000 to $130,000 per year, depending upon the size machine and the use it gets. If we estimate technological obsolescence in five years the expenditure will reach a minimum of $180,000 and can go up to the $1.2 million plateau. The converter's maximum production (24 a day) equals 28,800 boxes of hard copy in five years. The Agency's twelve-year-old Records Center has a storage capacity of 100,000 cubic feet and cost $661,000. Additional record storage space can be had for less than a fourth the cost of the Converter and is an alternate consideration unless specific operational advantages can be cited as applicable and in being (not merely planned).

6. Skillful systems analysts should be able to find ways to use the Converter to lessen the cost of some computer applications and thereby justify a portion of the new machine's cost. But careful supervision of the microfilm applications is necessary for expediting valid operations as well as for cost curtailment.

7. The Offices of Security (Index and Special Clearances) Personnel (Quarterly T/O lists for Vital Records) and Finance (Employee annual earning records) are three magnetic tape to microfilm conversion

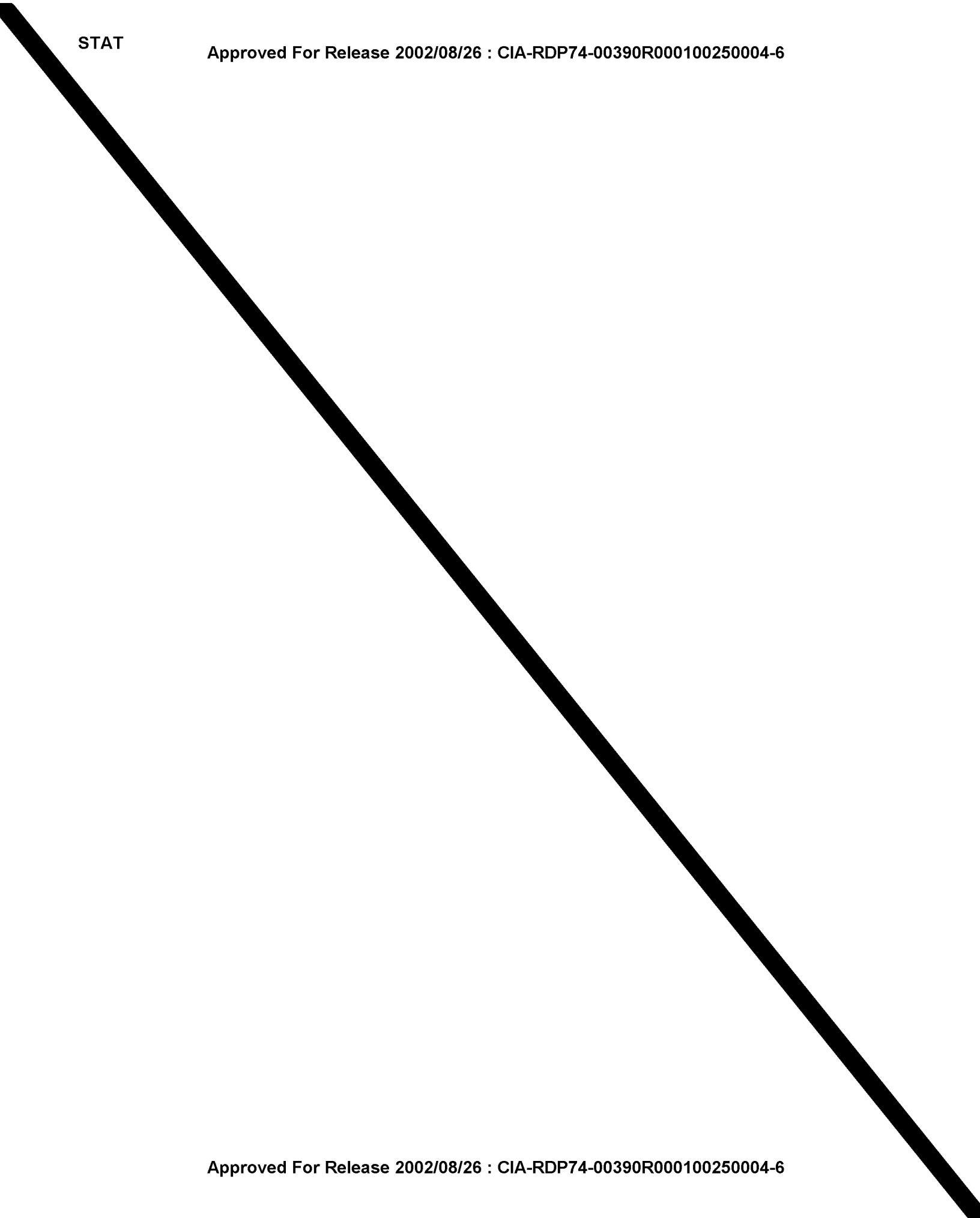
applications we believe are worth consideration. The Office of Medical Services and the SIPS Project report they have no immediate applications for this converter. The Office of Training and Logistics may have some need depending upon an establishment of use criteria and a priority ladder. The Office of Communications has no immediate application but is examining the proposal.

8. In some instances it is less costly to convert a computer report from magnetic tape to microfilm and then reproduce the film by Xerox copyflow. This process is faster than computer printers and could be an additional justification for the installation.

9. We feel the subject proposal deserving of a formal feasibility study but the costs and pitfalls are of sufficient magnitude to warrant careful analysis of the findings and strong supervision of the probable implementation.

STATINTL

CIA Records Administration Officer



Approved For Release 2002/08/26 : CIA-RDP74-00390R000100250004-6

3 November 1967
SG-67/630

MEMORANDUM FOR : Chief, Information Processing Staff

INFORMATION : IP Coordinators

SUBJECT : Clandestine Services' Requirement for Magnetic Tape to Microfilm Conversion (Electron Beam Recorder)

Attached for your consideration is a statement of existing and emerging requirements for magnetic-tape-to microfilm conversion in the Clandestine Services. It is suggested that this subject be scheduled for discussion at an IPC meeting with a view toward determining if there is a joint requirement for an EBR.

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[redacted]
Information Processing Coordinator, Plans

Attachment - a/s

cc - IPC, DDS&T
IPC, DDS
IPC, DDI
NPIC/IPD

2 November 1967

MEMORANDUM FOR : See Distribution

SUBJECT : CS Use of Electron Beam Recorder (EBR) Equipment for Conversion of Computer Output to Microfilm

1. Background

At the request of Chief [redacted] arranged to have 500,000 lines of [redacted] converted to 16mm microfilm on NSA's Stromberg-Carlson 4020 recorder in March 1966. Use of the SC-4020 was expected to reduce computer usage, eliminate the photography of hard copy, reduce turnaround time, and provide convenient lookup of microfilm and hard copy when needed. A significant factor in the acceptance of microfilmed serial listings was the introduction to the market of cartridge microfilm viewer-printers such as the 3M 400C, which eliminates hand threading of microfilm, and provides other features such as a frame counter to facilitate lookup, rapid and slow advance and rewind, automatic stop at end of reel, and hard copy in 6 seconds. [redacted] has 2 viewer-printers for use by [redacted] analysts and walk-in customers. In 1967, [redacted] requested an additional two sequences of [redacted] for a total of 1,400,000 line entries. Delays were encountered because of programing problems and custom changes on NSA's SC-4020, but the microfilm was delivered in October. [redacted] is enthusiastic about the microfilm because it provides

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GROUP 1
Excluded from automatic downgrading and declassification

compact storage, convenient lookup and hard copy, and eliminates multiple lookup in supplemental machine lists.

Further use of NSA's SC-4020 will be made in connection with a reformatting of the RIS machine file scheduled for December 67. The RIS master list contains 1.5 million line entries and 12 copies are made. Copies of the complete file before and after conversion are needed and rapid turnaround is a must. Routine aperture card production takes 6 weeks, and large interim lists (hard copy) are needed to supplement the aperture card decks, which are produced once or twice yearly. In October, the supplement grew so large (12,000 pages), that a supplemental-supplemental was printed, so that the user has to look in three places to find master records. The need for a relatively inexpensive method to print out the entire updated file at frequent intervals has in the case of the RIS master list, compelled us to use EBR.

2. CS Requirement for EBR

The following factors are relevant to the CS requirement for an EBR:

a. Large Serial Listings

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[redacted] is typical of a number of CS applications in which we have a large cumulative file covering a number of years to which new material is constantly being added. The large cumulative listings are cumbersome and space consuming, and have to be supplemented by monthly,

quarterly or semi-annual interim lists. From the user's point of view, it is desirable to have a current copy of the entire file available for reference as opposed to a master print and supplements, and the attendant need for multiple lookups. EBR recording on microfilm is more advantageous with large serial listings than with a multiplicity of small reports. For example, the RIS Master List can be converted to microfilm in 6 hours on the SC-4020 at $40 an hour, Total - $240; as compared to printing on the computer - 24 hours at $100/hr. for a total of $2,400.

b. Compact Storage

Microfilm copies require 1/50th of the storage space needed for hard copy machine listings. For example, converting the Phase 2 Abstracts to microfilm would release seven 5-drawer filing cabinets in the RID Files area for otherpurposes. Besides the economies realized by more compact storage of reference data, use of microfilm for massive printouts such as Abstracts will have the effect of making critical Headquarters building space available for people instead of paper.

Users of the RIS system have a problem storing the large supplemental listings, and some have to move 20 or 30 large volumes in and out of vaults daily. The 16,000 page RIS Master List, which takes up two safe drawers, could be stored in 1/10th of a safe drawer when reduced to microfilm.

c. Availability of cartridge viewer-printers at reference points.

3M 400C viewer printers are currently available at several reference points, both of which also use 16mm microfilm to reduce hard copy holdings of material other than machine lists:

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[redacted]

RID/Files has one viewer which will be used for abstract records as well as for travel machine lists. Thirteen 4-drawer file cabinets will be released by 16mm photography of old abstract slips.

Thus the cartridge viewer printers can be used for 16mm microfilm made by manual photography of hard copy as well as the microfilm made from computer output.

d. Need for Rapid Feedback

The requirements for compact storage and convenient access to large serial listings has in large part been met by converting RIS (and other GICS programs) and [redacted] lists to aperture cards. 25X1D Routine production of 12 sets of aperture cards for the RIS takes about 6 weeks, which is unduly long for users of the system, since they normally have to check the latest master list before adding new data to the file. To cover this hiatus, the principal RIS editor is given a hard copy of the master file for temporary use until the aperture cards are available, at which time the hard copy is destroyed.

Turnaround time for microfilm should be no more than 3-4 days with an in-house EBR. Priority service should take no more than 2 days.

e. Cost comparison of Aperture Cards and Microfilm

Aperture card production of a serial list requires 35mm photography of the hard copy on an automatic camera, verification of

the film to see that all pages have been photographed, MIPAC processing and verification, and interpretation of the aperture cards. Cost (in March 1967) of 12 sets of RIS aperture card decks (4,050 cards per deck), exclusive of computer costs was $1,800 or $150 a deck. Comparable costs for 12 sets of microfilm, including SC-4020 time, film and processing, and cartridges is estimated at $720 (or $60 a set), broken down as follows:

6 hrs of SC-4020 time at $40/hr.	$240
1100 ft. of silver film, processed	45
12100ft. of diazo copies, processed	435
	$720

In addition, 132 cartridges @$1.10 would be required, but these are reusable.

f. For applications which require a hard copy print capability, such as [redacted], microfilm is preferred to aperture cards, since hard copy from aperture cards is not readily available.

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g. Vital Materials Requirements

Availability of an EBR would enable us to fulfill VM requirements with a moderate expenditure of funds, computer time and materials. Much of our VM program for ADP applications amounts to backup of the computer operation - sending duplicate magnetic tapes to a remote location. It is questionable that we could locate, in a contingency situation, computers configured like ours, along with operators and programers. Yet all these would be needed to get usable information from our computer tapes. Consequently, our VM effort presupposes that only minimal facilities will be available, and that hard copy or other human-readable data must be

provided. In the case of our main index, 8 million index records are stored in VM on microfilm. This collection is supplemented by annual deposits of current index cards in punch card form, roughly sorted by surname. Thus a name searcher would have to look in 5 places to carry out a name check.

An EBR would provide us with an economic means of maintaining in VM a reasonably current microfilm copy of our Main Index and other vital central records. This is envisioned as a continuous process, with a portion of the file being recorded at a time on a yearly cycle.

3. Specific CS Requirements

Current CS requirements for EB recording are summarized in Attachment A. These known requirements total about 90,000 pages a month. It would be safe to assume that additional applications would raise this to 100,000 pages a month. Starting in late 1969, we will have a requirement to provide some kind of VM backup for our 8 million index records, which requires printing 2,667,000 pages yearly or 222,000 pages monthly.

4. Based on unofficial guidelines for justifying an EBR - a requirement to print 200,000 pages per month-we seem to have half a requirement now and expect to have a requirement and a half in 1969.

Our situation may be stated as follows:

a. Magnetic tape to microfilm conversion seems to be the most economic means of printing large serial listings such as our GICS applications, and providing rapid turnaround. It has proven to be an efficient means of recording large travel listings and of providing look-up and hard copy service on microfilm viewer-printers. EBR promises a

means of compact storage of central records such as our abstracts and destroyed file listings. Finally, it provides an economically feasible solution to VM requirements for ADP files in the central records system.

b. As we add GICS, Abstracts and other systems to the list of SC-4020 applications in the coming months, our commitment to microfilm use will grow. Fifteen to twenty microfilm viewers/printers will have to be acquired by staffs, divisions and RID at a cost of $8,000 to $50,000. Users in RID Files, SB, CI and other components will depend on this service and gear their reference service on the assumption that it will continue.

c. NSA has indicated that time is available on their SC-4020 and will continue to be available in 1968. Use of NSA's EBR will enable us to prove out feasibility and user acceptance, but the following problems have been encountered:

(1) Time lag in shipping magnetic tapes to NSA and in getting microfilm back. This, plus the fact that NSA has its own daily priority jobs means that we cannot in the long run depend on borrowed time for jobs that require quick turnaround.

(2) Programs have to be written to format and block records for SC-4020 recording. Considerable delays were experienced in programing the [redacted] application because our programers were not given complete information on SC-4020 characteristics and because NSA's SC-4020 is non-standard.

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(3) File Sensitivity - Att. A shows that most applications we will process at NSA will require that a CIA escort accompany the magnetic tapes from the CIA Liaison office in NSA to the SC-4020, stay there while processing takes place, and escort tapes and film back to the Liaison office. This is cumbersome and time consuming - some machine runs will take 6-8 hrs. and a machine malfunction could extend the time. Our sensitive compartmented files could not be processed at NSA and are indicated as "In-House" processing only on Att. A.

Thus we will continue to borrow time on NSA's SC-4020 and use it where we can to solve our immediate problems, gain experience in EBR and test user acceptance. At the same time, we should be making plans for the rental or acquisition of our own EBR, since delivery time on the new line of equipment is 18 months (we might be able to get a used EBR on rental sooner than that).

d. The CS requirement for EBR is solely for alpha/numeric character printing - no need for line plotting has been identified. If there is no requirement for plotting, our needs could be met by equipment on the order of the SC-4360, which prints characters only. Basic rental of an SC-4360 is $2,726 monthly, compared to $8,000 monthly for an SC-4020 or SC-4060, which combine character printing and line plotting.

If the CS procured an off-line character printer such as the SC-4360, it would of course make surplus time available to other Agency components.

If a combined Clandestine Services, NPIC, CRS, and OCS requirement for EBR is put together, we can assume that line plotting would be a requirement. It would probably take time to coordinate requirements, decide who is going to run the EBR facility and where it will be located. Such optional features as on-line film development and on-line hard copy, typewriter consoles and microfiche camera may be vital to some users and non-essential to others.

e. Equipment Selection

Two manufacturers stand out in the EBR field. Stromberg-Carlson has been in the field about 10 years and there is ample user experience with the SC-4020 The new line of Stromberg Carlson equipment provides a variety of options of character only, character and line-plotting, microfiche cameras, on-line development and hard copy. In the past year, the 3M corporation has come out with Series F EBR that records directly on film without use of a cathode ray tube, and is based on the new dry silver technology (film is heat rather than chemical developed). Monthly rental of the Series F is about $3,500.

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Distribution:
1 - C/RID
1 - CI/MRO
1 - SB/RMO

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ATTACHMENT A

PROGRAM	No. of Pages Yearly	Production Cycle	Number of Copies	File Sensitivity	Computer Print Time in hours	SC-4020 Time	Average Pages Per Month
GZSS -	36,000	Yearly & Quarterly	4	Escort	32	8	3,000
OGIC -	12,000	Semi-annual	12	SECRET	11	2.75	1,000
OGRS -	360,000	Monthly	12	Escort	288	72	30,000
OGCW -	3,000	Semi-annual	5	Escort	3	.75	500
CSTX	36,000	Yearly	2	In-house	32	8	3,000
OZCW -	2,400	Yearly, Semi-annual	2	Escort	2	.5	200
CMAX -	3,600	Yearly	2	Escort	4	1	300
CZMX -	8,300	Yearly, Semi-annual	2	[illegible]	8	2	700
CAAX -	156,000	Quarterly	1	Escort	128	32	13,000
CAAX -	50,000	Yearly	1	Escort	44	11	4,200
OMMI -	10,000	Quarterly	1	In-House	8	2	867
OMMI -	7,500	Yearly	1	In-House	6	1.75	625
OGTT -	16,800	Monthly	6	In-House	15	3.75	1,400
OTPT -	7,200	Monthly	2	In-House	6.4	1.6	600
CDDY -	15,000	Yearly	3	Escort			1,250
CNLX -	200,000	Continuous	8	Unclassified	176	44	16,667
	923,800		SECRET		777.4	194.15	89,909

Project — Evaluation of Converter,

The O/Personnel listings
Official Record Copy of
the Agency T/O by organizatn

The Alpha listing of everyone
This comes to V.R. & is then moved to Archives Quarterly
It is a permanent file.

The O/Sec Index is at Rec Ctr
on Mag tape as a back up insurance copy.
these tapes are not useable at the Center
in an emergency —
However if those tapes were converted
periodically & the film also stored
then we'd have a useable
item on hand.
(relation to Page 5 of Dyke Study).

Finance employee earnings record must be kept 56 yrs.

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see

It may be possible to use
converter as the annual postings

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See SIPS for Application

MS + Prog Listings could be stored on this

6X1D 1. The technical points discussed by [redacted] in this paper agree with my
6X1D understanding of them -

2. [redacted] feel that the SIPS will produce substantial amounts of data that will lend itself to microform treatment, although at this time they cannot identify specific reports nor quantities.

3. I am sure that Col. White would be happy to have more microfilm in the Records Center and this method (EBR) would provide the least expensive way of, almost automatically, converting future deposits to microfilm before they are sent to the Center. This process is well suited to meet historical, VM and statutory requirements.

4, It would be economically advantageous to use a combination of microfilm – Xerox Copyflo printer to produce long single copy listings instead of printing them on the computer printer. At 40 feet per minute the Copyflo is more than twice as fast and its rental is far below computer printing. The advantage might hold for 2 or 3 copies but I am not sure where the breakeven point would be.

5, Attached are some brochures re: Stromberg-Carlson's line of FBR equipment.

JEA